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New Species of *Calendra* from Mexico, with Notes on Others (Coleoptera, Curculionidae)

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Among the 300 specimens of *Calendra* (billbugs) collected on the 1953 David Rockefeller American Museum expedition to Mexico were found two new species which bring the total of known endemic Mexican species to nine. These are described below and are followed by a list of other species, for which new distributional records have been noted since the revision of the genus by the author in 1951 (Bull. Amer. Mus. Nat. Hist., vol. 98, pp. 29–186, figs. 1–116). These new records fill the distributional gaps for some species and extend the ranges of others. A few are from material in other collections, but the majority are from the collection of the American Museum of Natural History. The material from the 1947 Rockefeller expedition, included in the above-mentioned revision, came from the northwestern states of Chihuahua, Durango, and Zacatecas, also Coahuila; the 1952 expedition went into the northeastern states of Nuevo Leon, Tamaulipas, eastern San Luis Potosi, and Coahuila; the 1953 expedition collected material in the central and western states (western San Luis Potosi, Aguascalientes, Jalisco, Guanajuato, Michoacan, and the adjoining Pacific coastal area).

Calendra charlesi, new species

DESCRIPTION OF TYPE, MALE: Length, 6 mm. Beak (from side) about three-quarters of length of pronotum, compressed laterally, nearly straight, not wider at apex, apex beneath rectangular, base not swollen over antennal insertion, no fovea of punctures in front of eye, apex (from

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above) rounded and with slight trace of median keel, base of beak with fine impressed line, front of head finely punctured. Antennal club oval elongate, sensitive portion very small. Eye with lower margin at same level as insertion of beak. No thoracic lobe. Pronotum not tomentose, about as long as elytra and nearly as wide, covered with punctures that are sparser and smaller in the ill-defined areas representing a broad median vitta and two broad lateral vittae. Scutellum narrower than long. Elytra not tomentose, no longer than pronotum, suture, third and fifth intervals elevated and slightly broader than others, punctures about same size as those at base of pronotum, in triple rows on suture, more or less in single rows on other intervals; striae punctures about same size, separated by their diameter or more. Sides of prosternum and mesosternum sparsely punctured, mesoepimeron with larger denser punctures, and the rest below with large sparse punctures. Femora with sparse fine punctures, those on front femora somewhat larger. Front tibiae with outer apical angle worn, but flared outward. All tarsi with third segment narrow, below mostly smooth, sparsely hairy at sides. Pygidium with large dense punctures except at apex where they are smaller. Ventral cavity shallow.

TYPES: Holotype, male, and allotype, female, 6 miles south of Durango, Durango, Mexico, August 23, 1953, C. and P. Vaurie, collectors, in the collection of the American Museum of Natural History.

REMARKS: This unusual little species with its over-sized thorax and abbreviated elytra belongs to the group of species composed of *cazieri*, *inaequalis*, *compressirostris*, and *cultellata*. These robust species (5 to 8 mm.) all have the lower edge of the eye at the same level as the insertion of the beak, the beak straight or nearly so, the antennal club oval, its sensitive part minute, the pronotum very large and broad and nearly as long as the elytra, the outer apical angle of the front tibiae dilated, and the tarsi narrow. Three of the species (*cazieri*, *cultellata*, *compressirostris*) have the beak so compressed laterally that the upper edge is knife-like in sharpness; the two latter species have the normally subapical tooth on the front tibiae situated near the middle. *Calendra charlesi* has neither the tibiae nor the beak as above, although the beak has a very faint keel. It is more similar to *inaequalis* from the Atlantic and Gulf coastal states, but differs in a number of characters. The pronotum has the same pattern in both species, but the median and lateral "vittae" in *charlesi* are scarcely defined and are not raised or shiny or nearly impunctate as in *inaequalis*. The elytra differ by being shorter, more convex, lacking subapical callosities, and having many crowded punctures on the sutural interval. Both the inner and outer margins of the hind tibiae are slightly sinuate in

charlesi but perfectly straight in *inaequalis*. The genitalia of the male are truncate at apex, not acuminate as in *inaequalis*, nor broadly rounded as in *cultellata* and *compressirostris*, nor with a little knob as in *cazieri*. None of these other species has been taken in Mexico, although all have occurred in Texas. The allotype is similar to the type except that it is a little larger (7 mm.), has the beak sharper on the upper edge, and has no ventral cavity.

Both specimens were collected in a drizzling rain on a sandy, somewhat saline area by the side of the highway. There were a few low bushes and wiry plants, but the weevils were walking on the bare areas. Two specimens of *C. vomerina* were taken in the same situation.

This species is named for my husband, Charles, whose imagination and perseverance have made the success of many a collecting trip.

Calendra corona, new species

DESCRIPTION OF TYPE, MALE: Length, 7 mm. Beak (from side) about three-quarters of length of pronotum, compressed laterally, nearly straight, wider at apex, apex beneath acute, base not swollen over antennal insertion, no fovea in front of eye, apex (from above) concave, base with large dense punctures as on front of head. Eye extending below insertion of beak. No thoracic lobe. Pronotum not tomentose, about two-thirds of length of elytra, covered uniformly (except for short longitudinal impunctate line) with large contiguous punctures like those on base of beak, the base with a broad, shallow, V-shaped depression extending obliquely forward to middle. Scutellum narrower than long. Elytra not tomentose, the punctures of same size and density as on pronotum, so dense on the intervals that the narrow striae can scarcely be seen, the even intervals narrower and with but one row of punctures, the suture and other odd intervals with two rows; striae punctures of the same size as those on intervals, but separated by their diameter or more, elytral surface uneven, transversely wavy, with a shallow transverse depression in front of the prominent subapical umbone and a small depression at base next to humeral umbone. Sides of prosternum with contiguous large punctures as on pronotum, the rest below also densely, coarsely punctured, apex of abdomen with slight depression. Front femora punctured as sides of prosternum, other femora with smaller, sparser punctures. Front tibiae with outer apical angle not prolonged or dilated. All tarsi with third segment longer than wide, mostly smooth below, sparsely hairy at sides. Pygidium with tufts of hair at sides of apex, the punctures large and contiguous except at apex where they are small and contiguous. Ventral cavity shallow.

TYPES: Holotype, male, allotype, female, five male and 15 female paratypes, all from Villa Corona, Lake Zacoalco, Jalisco, Mexico, July 13, 1953, C. and P. Vaurie, collectors. Holotype, allotype, and 14 paratypes are in the American Museum of Natural History; one paratype each will be deposited in the Chicago Natural History Museum, the University of Kansas, the California Academy of Sciences, the United States National Museum, the Museum of Comparative Zoölogy, and the collection of David Rockefeller.

REMARKS: This small glabrous species is more densely, coarsely, deeply, and uniformly punctured all over than are any others in the genus. The elytral punctuation is quite similar to that of *tarda* from southern California, which *corona* resembles also in the shape of the beak, but it differs distinctly from *tarda* by having the subapical callosity on the elytra prominent, not flattened, the elytra transversely rugose, the sutural interval entirely punctured, not impunctate on the inner side, the prosternum, front femora, base of the beak, and front of the head densely and coarsely punctured, not finely so, and the apex of the beak from above concave, not flat.

In my key to the Mexican *Calendra* (*tom. cit.*, p. 60) this species reaches the dichotomy containing *sulcifrons* (Veracruz and Oaxaca), which also has depressions on the elytra, but in *sulcifrons* the pronotum has four round depressions and is often tomentose, the beak is swollen over the antennal insertion, and the male has a tumid or tuberculate pygidium. In the key to the species in the United States, *corona* runs out to *parvula* (eastern United States west to Colorado and Texas) which it resembles in the pronotal punctuation and pattern, in the punctuation of the under surface and of the front femora, and in the prominent subapical callosity on the elytra, but the beak and the punctuation and sculpture of the elytra differ, and *corona* is also a more robust insect. The beak in *corona* is nearly twice as wide as in *parvula*, also shorter (shorter than the pronotum) and straighter, not strongly arched. The elytral intervals are not at all alternating in height, as they are in *parvula*, and they have many more punctures. The male genitalia are almost the same as those of *tarda*, not elongate and evenly acuminate as in *parvula*.

The paratype series was collected on the hard sandy shores of Lake Zacoalco at about 4000 feet, some of them 20 feet from the water's edge in a band of detritus (straws, sticks, seeds), others wandering farther away on the open sand. Ten specimens of *C. memnonia* and one specimen of *cicatristriata* were taken in the same locality.

VARIATION: The size range in the paratype series is from 6.5 to 8.5 mm. The pronotum varies in that a narrow median impunctate line may

be present or not and when present varies in length and width. It is wider and longer in the allotype than in the holotype. The allotype and some other specimens also have a vague shallow depression subapically at middle in which the punctures are a little larger or denser than on the rest of the pronotum. The V-like depressions basally are more marked on some specimens than on others. These are the same kind of pronotal variations as were found in *cicatristriata*. The beak and elytra are quite uniform.

NEW DISTRIBUTIONAL RECORDS OF SPECIES TAKEN IN MEXICO,
WITH ADDITIONAL SYSTEMATIC AND ECOLOGICAL NOTES

The species are given in the order of my 1951 revision. All the records for 1953 in Mexico are based on specimens collected by C. and P. Vaurie on the Rockefeller expedition of that year; all those for 1952, by Cazier, Gertsch, and Schrammel. The names of other collectors are given in parentheses.

Calendra ima (Gyllenhal): Taken from a third locality in Durango, 1 mile north of Registro in September (R. F. Smith), and four more specimens from Arizona, from Patagonia (F. M. Parker).

Calendra angusta (Boheman): Formerly known from Chihuahua, Durango, and Hidalgo. I now have examined a male from near San Luis Potosi in the state of that name (B. Rotger).

Calendra quadrivittata (Gyllenhal): Known from Durango, Puebla, and Distrito Federal. Taken in 1953 in large numbers between Durango and the southern localities, in San Luis Potosi, San Luis Potosi, June (47 specimens), at El Retoño, 10 miles east of Aguascalientes in that state, August (191 specimens), and at Lagos de Moreno, Jalisco, July (one specimen). In the first locality the weevils were dug out at night from the grassy edges of a pool in a desert area, and in Aguascalientes they were picked from the moist earth under dry cow dung beside a similar pool. The specimen from Jalisco was thought at first to be *C. lineata* (Champion), a very similar species, because the last abdominal segment is somewhat more noticeably punctured, but I believe the abdomen is not so coarsely punctured as in *lineata*, of which I have no longer any specimen for comparison. Because only the males of these two species can be separated definitely, and this specimen is a female, I hesitate to call it *lineata*, which is known so far only from the type locality, Amula, Guerrero.

Calendra vomerina (LeConte): Two specimens from 6 miles south of Durango, Durango, August, 1953, extend the range farther south in Mexico than Sonora, the type locality. Two specimens from Moab, Utah,

August, 1950 (Cohn, Boone, Cazier), and September, 1953 (Cazier), add Utah to the western states in which the species occurs. The specimens from Utah are the long-beaked type (Vaurie, *tom. cit.*, pp. 78-79). The Mexican ones have the beak short.

Calendra memnonia (Gyllenhal) : Ten specimens of this species were collected at Villa Corona on the sandy shores of Lake Zacoalco, Jalisco, July, 1953. Previous records were from the neighboring state of Guanajuato to the east, also Distrito Federal, Yucatan, and Tucson, Arizona.

Calendra championi Vaurie : Four specimens collected within the known distribution of this species bring the total of specimens seen to 11 ; one comes from 12 miles northwest of Gran Morelos, Chihuahua, August, 1950 (R. F. Smith), one from 15 miles east, and two from 10 miles east (El Retoño), of Aguascalientes, Aguascalientes, August, 1953. The two last-named specimens were dug out from moist earth under cow chips by the side of a cattle pool along with many specimens of *C. quadrivittata*. A fifth specimen from Leon, Guanajuato, extends the range a little farther south.

Calendra cicatristriata (Fahraeus) : This species is widespread from North Dakota to southern Mexico. The Rockefeller 1953 expedition collected four specimens from a Mexican state from which it has not been previously recorded, San Luis Potosi (San Luis Potosi, June), and from five additional localities in other states : from Jalisco at Chappala on Lake Chappala, July, from Villa Corona on Lake Zacoalco, July, and 2 miles south of Tlaquepaque, July ; also from 6 miles south of Durango in the state of Durango, August. The specimens from San Luis Potosi and Durango have the pronotal vittae and depressions more clearly marked ; those from Jalisco have them differentiated at base only, the vittae being confluent apically (see Vaurie, *tom. cit.*, pp. 84-87). The weevils were picked up as they wandered over dry sandy areas near water, except those from San Luis Potosi which were dug out of the grassy earth near pools in an otherwise arid area.

Calendra neomexicana (Chittenden) : In Mexico this species had been recorded from the state of Chihuahua only. On the 1952 Rockefeller expedition it was taken in northeast Mexico in the state of Tamaulipas, at Padilla in May. The range in the United States (New Mexico, Colorado, and Nebraska) has been extended by two specimens from Kansas, Gray and Clark counties.

Calendra phoeniciensis (Chittenden) : Chittenden was correct when he said that his species (from Arizona and California) might extend into Mexico. A specimen was taken on the shores of the Gulf of California at

Empalme, Cochore Beach, in southern Sonora, July, 1952 (C. and P. Vaurie), and five specimens on the shores of Lake Chappala in Jalisco, July, 1953 (four of these at Chappala itself and one at Ajijic). The Sonora specimen is the only one with the characteristic yellowish coating on the pronotum, but the others all have the pronotal vittae and the elongate apical depression well marked.

Calendra incurrens (Gyllenhal): Two new localities for this endemic Mexican species are Lake Patzcuaro, Michoacan, November (B. Rotger), and San Luis Potosi, San Luis Potosi, November (B. Rotger).

Calendra callosa (Olivier): A specimen from Cabullona, Sonora, just south of Douglas, Arizona, represents the first definite record of this species from Mexico, although it has been known to occur there. It is an eastern species that spreads west in the United States to New Mexico and Arizona. A specimen from "Louisiana" is here recorded for that state.

Calendra cariosa (Olivier): Known from Veracruz in southeastern Mexico and from Guatemala as well as from the eastern and central states in the United States. An additional record from Mexico is Pujal, in the eastern part of San Luis Potosi, May, 1952.

Calendra australis australis (Chittenden): A specimen from 6 miles northeast of Meoqui, Chihuahua, September, 1950 (R. F. Smith), is the first record of this subspecies from Mexico. I have also seen a specimen from San Antonio in southern Texas, whereas formerly I had no specimens from south of Dallas.

NEW LOCALITIES IN THE UNITED STATES

(See also *ima*, *vomerina*, *neomexicana*, *callosa*, *a. australis* above)

Calendra gentilis (LeConte): The state of Arizona should be added to the known range of this common species of California and the northwest, two specimens having been seen, one from "Arizona," one from Douglas.

Calendra gagatina (Gyllenhal): A female of this rather uncommon species with the five characteristic vittae of the pronotum virtually indistinguishable from the rest of the pronotum has been seen from St. Petersburg, Florida. Previous records are from New York, New Jersey, Georgia, Louisiana, and Mississippi.

Calendra bartramiae (Chittenden): No new state localities have been noted for this species from Texas and Arkansas, but as it appears to be quite rare, two new Texas records are given, a male from Lufkin, Angelina County, May, 1952, and two specimens from Colorado County, May, 1922 (G. O. Wiley). The coating on the pronotum is so thick that

the five round depressions are scarcely visible. The male genitalia, which had not formerly been examined, are somewhat like those of *parvula* and *minima*.

Calendra parvula (Gyllenhal) : In the widespread geographic range given for this species in my revision no specimen was reported from the state of Kansas. One has now been seen from Liberal, June, 1933 (R. H. Beamer), and one from Onaga. Both have the pronotal vittae indicated.

Calendra sayi (Gyllenhal) : One specimen from Lion County, Kansas, 1915 (R. H. Beamer).

Calendra venatus vestita (Chittenden) : Although it was presumed this subspecies occurred in Oklahoma, because it was taken as far north as southern Kansas, I did not have a specimen until the present one, a male from Stillwater, 1948 (L. Hopkins).

Calendra venatus glyceriae (Chittenden) : As with the above, this subspecies was thought to occur in Arizona, because it occurred in California and New Mexico. I have now seen a specimen from San Bernardino Ranch in southern Arizona.

Calendra hoegbergii (Boheman) : Recorded only from Texas and Veracruz; now known from Douglas, Arizona (a male, August). The scutellum in the specimen examined is bare and not encrusted, as was also true of one of the other 15 specimens examined for my revision.

Calendra pontederiae (Chittenden) : Indiana was not included in the wide but discontinuous range of this species. A specimen from Ogden Dunes, June (H. Dybas), establishes the occurrence of the species in that state.

Calendra pertinax ludoviciana (Chittenden) : A specimen from Dexter, Stoddard County, Missouri, July, corroborates Satterthwait's Missouri record for this subspecies. Therefore the range of *ludoviciana* which I show (*tom. cit.*, fig. 46 on p. 161) as not going farther north than Hope, Arkansas, should include the point marked on that map with a question mark in Missouri.